4U-profile, 24-bay
Dual Controller
FC-2G to SATA-II RAID Subsystem

EonStor® A24F-R2224

The A24F-R2224 subsystem comes with two (2) 2Gb per second (Gbps) Fibre channels interfaced through eight (8) SFP ports on two (2) independent I/O modules with embedded bypass. The subsystem's 4U-profile, rack-mountable chassis houses dual-redundant RAID controllers featuring complete RAID protection and data integrity functionality. Designed for no-single-point-of-failure, subsystem operation is protected by redundant, hot-swappable power supplies and cooling fan modules. All major components are hot-replaceable, including its Li-ION battery, host I/O modules, and the RAID-protected disk drives.

The subsystem provides high-density array capacity with twenty-four (24) drive bays for SATA-II disk drives, facilitates large I/O transfer over its dual PCI-X bus architecture, and transmits block I/Os over flexible caching and the dedicated XOR engine. The A24F combines the capabilities and block-level performance of RAID storage with reliable Fibre Channel connectivity.

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HIGHLIGHTS

Reliable Storage Networking Solution Provider

Based on a proven architecture designed for continuous operation with heavy access loads, the EonStor A24F-R2224 is ideal for environments from SAN-attached storage to performance-intensive applications operating within an open-system and multi-path framework.

This SAN-ready subsystem meets the demands for enterprise-class storage in terms of its reliable firmware, ease of management, fault-proof hardware, and on-the-fly scalability.

Highlights

- Market leading I/O performance
  - Sustained RAID5 Read/Write: 770/460 (MB/sec)
- Ultra-high-density, 4U-profile, 24-bay enclosure
- Dual Active redundant controller
- Support RAID Level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60, NRAID, JBOD
- Separate Host I/O board design
- Max. Connections for 8 host servers
- Four (4) FC-2G host channels
- Up to 12TB of storage capacity
- Support up to 2GB DDR RAM module
- Hot-swappable battery backup unit (BBU)
- Designed for SATA-II disk drives
- Ease of maintenance with host-swappable FRUs
- External UPS support

Reliability

In addition to RAID protection against drive failure, the subsystem has ingenious means to deal with other challenges that may jeopardize data integrity. For example, hard disks wear down over time and drives may arrive from the manufacturer with inherent defects. Media Scan and Task Scheduler are among the DrvSmart utilities designed to detect and mend these problems.

The subsystem is also equipped with error containment algorithms, known as the SysSmart functions. If a critical component fails, e.g., a battery module, the subsystem automatically disables write-back caching and assumes the conservative write-through mode. If the fault condition persists for an extended period of time, the subsystem enters an idle state. All of these precautions help ensure safe operation and data integrity.

Availability

The EonStor A24F is powered by field-proven technologies that ensure data protection and performance to meet various storage needs. Data is secured by sophisticated, redundant components and advanced firmware developed through a decade of experience in RAID technology. In addition to the choice of RAID levels, 0, 1(0+1), 3, 5, 6, 10, 30, 50 and 60, the subsystem protects your data with various high-availability algorithms ranging from predictive checking and self-healing rebuilds to system self-diagnostics.

To ensure a high level of availability, critical components such as disk drives, power supplies, and cooling fans are all redundant and hot-swappable. Modules are integrated with the passive backplane via board-to-board connectors to eliminate points of failure. Assisted by GUI management software, system administrators can constantly monitor the operating status of all components through a console locally or remotely situated. The subsystem guarantees data integrity with selected, high MTBF components; a modular, fault-tolerant design; and a complete set of environmental monitoring and fault protection capabilities built in the firmware.

Serviceability

All critical modules are housed in separate, easily retrievable canisters. In the event of component failure, a hard disk drive, power supply, battery module, RAID controller, or cooling fan can be replaced within seconds. The modules are closely monitored using self-diagnostic features and the help of runtime utilities such as RAIDWatch. Spring screws, securing latches, and key-locks all provide easier access to the modules.

A variety of configuration and monitoring methods are available, either locally via the LCD keypad panel and the text-mode RS-232C terminal, or remotely through the Java-based GUI manager. All faulty conditions, including RAID configuration events, module failure, voltage and temperature readings, are instantly reported. A system administrator can select from the following notification methods to receive reports when away from the installation site: LAN broadcast, SNMP traps, email, fax, SMS, ICQ, and MSN Messenger. Even the notification utility can be installed redundantly on two different machines to avoid the chance of blind time.

SPECIFICATIONS

Reliable Storage Networking Solution Provider

Infortrend Smart Technologies

Derived from more than ten years of experience in RAID storage design, Infortrend's firmware features extremely compact protocol and rich varieties of algorithms to deal with the stringent requirements of storage applications. The technologies enhance I/O processing, drive handling, and system management.

IOSmart

The IOSmart technologies consist of specific functions and configuration options that control various I/O characteristics in order to meet the rapidly increasing requirements of today's applications. These functions include adaptable stripe size; write policy; optimizations modes; Guaranteed Latency I/O; and automatically adjusted, multi-threaded, predictive read-ahead, sorted, or group writes.

DrvSmart

DrvSmart is comprised of fault-preventive algorithms that ensure data integrity when hard drive imperfections occur. These mechanisms correct minor defects, increase reaction time, allow more time to prepare a rebuild, and help minimize performance impact. DrvSmart functions include Media Scan and Task Scheduler, hot-spare, drive roaming, SMART and manual cloning options, and more.

SysSmart

SysSmart combines enclosure monitoring and firmware management capabilities designed to minimize the chance of downtime caused by hardware failures. With SysSmart, Infortrend's subsystems are smartly managed and guarded against extreme operating conditions.

SysSmart functions include the event-triggered, adaptive write policy, auto-shutdown, dual-speed fan control, and the various monitoring utilities and approaches included in the powerful RAIDWatch Manager software.

Specifications

Subsystem Characteristics

- 600MHz RISC CPU, 512KB L2 cache
- ASIC266 RAID engine
- Redundant RAID controllers
- DDR cache memory 512MB
- BBUs per controller 1
- LCD keypad panel
- Serial COM ports per controller 2
- Ethernet ports per controller 1
- Diagnostic LEDs on all FRUs

Drive Interface

- Number of disk trays 24
- Serial ATA II/I drive support

Host Interface

- 2Gbps SFP ports 8
- Single channel bandwidth 200MBps
- Tag command queuing
- Multiple target IDs

RAID Configurations

- RAID levels 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60, JBOD
- Max. 32 logical drives
- Max. 1024 LUNs
- Multiple array configurations
- Automatic background rebuild
- Intelligent drive handling

High Availability

- Redundant, and hot-swappable FRUs
- System self-diagnostics
- Dedicated and Global hot spare
- Li-ION battery backup module
- UPS support

Management Software

- RAIDWatch Manager software
- Terminal via RS-232C
- Telnet over Ethernet
- LCD keypad panel
- Event notification methods:
  - Email
  - Fax
  - LAN broadcast
  - SNMP traps
  - Cell phone message SMS
  - Instant messages MSN/ICQ

OS Support

- Microsoft Windows NT
- Microsoft Windows 2000 Server
- Microsoft Windows 2003 Server
- Sun Solaris ver. 8/9
- Red Hat Linux ver. 8/9, Enterprise ver. 3
- SUSE Linux ver. 8/9

Requirements

- Input Voltage:
  90AC at 8A; 264VAC at 4A with PFC (auto-switching)
- DC Output:
  12V-24A; 5V-36A; 3.3V-20A
- Relative Humidity:
  5% to 95% non-condensing
- Operating Temperature:
  0°C to 40°C

Dimensions

- 4U, 19-inch rackmount chassis
- Chassis with handles:
  447(W) x 174.4(H) x 514(D) mm
  (17.6 x 6.86 x 20.2 inches)
- Chassis without handles:
  482(W) x 174.4(H) x 498(D) mm
  (18.9 x 6.86 x 19.6 inches)

Spare Parts & Accessories

Reliable Storage Networking Solution Provider

Major Markets and Uses

Infortrend products are used in disk-to-disk backup, server-attached and network data storage and in major industries such as medical imaging, security/CCTV, and digital media including video-on-demand, stream editing and more.

Spare Parts

Description	Part Number
Fibre-to-SATA RAID controller module, for ES A24F-R2224 subsystems, no FC-2G SFP host connectors, RAID 6	IFT-84AF22RD24E
Drive tray, Type-III bezel w/maize color push button and Type-II LED lightpipe.	IFT-9274CDTray
Drive tray, Type-III bezel and Type-II LED lightpipe, 2-to-1 SATA (SATA I) MUX conversion, power MOS switch embedded, dual-controller subsystems	IFT-9274A2DT2S1S
HDD 2-to-1 SATA (SATA II) MUX conversion, SCA-II-to-SATA, power MOS switch embedded, single-controller subsystems	IFT-9274A2N2S1S
Power supply module, for ES 4U/24-bay subsystems, 405W (N+1) capacity	IFT-9274CPSU
Cooling fan module, for ES 4U/24-bay subsystems	IFT-9274CFanMod
Fibre Channel (FC-2G) I/O board, left-hand side, for ES 4U/24-bay subsystems, 4 x SFP ports w/ onboard host hub	IFT-9274CF2HIO4L
Fibre Channel (FC-2G) I/O board, right-hand side, for ES 4U/24-bay subsystems, 4 x SFP ports w/ onboard host hub	IFT-9274CF2HIO4R
Left-side forearm handle with an LCD panel	IFT-9274HandLLCD
Right-side forearm handle	IFT-9274CHandR
Battery cell pack, Li-ION, for ES 4U/24-bay subsystems	IFT-9274CBT-C
512MB DDR RAM DIMM module, for all EonStor subsystems	IFT-DDRESCM5
1GB DDR RAM DIMM module, for all EonStor subsystems	IFT-DDRESCMA
2GB DDR RAM DIMM module, for all EonStor subsystems	IFT-DDRESCMB

Accessories

Description	Part Number
Null modem, DB9 female to DB9 male, wires swapped	IFT-9011
Serial port Y-cable, 2 audio jacks to 1 DB-9; maintenance-free during controller failover/failback	IFT-9270AYCab
RS-232C serial cable, audio jack to DB9	IFT-9270ASCab
Agilent Fibre Channel 2.125 / 1.0625 GBd Small Form Pluggable Optical Transceiver, LC, wave-length 850nm, multi-mode	IFT-9270CSFP2GA01
Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 1 Meter	IFT-9270CFCCab01
Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 5 Meters	IFT-9270CFCCab02
Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 10 Meters	IFT-9270CFCCab03
Dummy drive tray, Type-II bezel	IFT-9272CDTrayDmy
UPS Cable, audio-jack-to-DB9	IFT-9270CUPSCab
UPS Y-Cable, 2 audio-jack-to-DB9	IFT-9270CUPSYCab
Slide rails assembly, for ES 4U/24-bay, 23" to 32" rack depth	IFT-9274Cslider32
Slide rails assembly, for ES 4U/24-bay, 23" to 36" rack depth	IFT-9274Cslider36

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